



CEWIT An Overview

CENTER OF EXCELLENCE IN WIRELESS AND INFORMATION TECHNOLOGY

Our Mission

The Center is a next generation research and educational facility whose mission is threefold: become recognized as a world leader in interdisciplinary research in the emerging, critical technologies of the information age, address the skilled technology worker shortage, and foster new enterprise development.

Our Center

To best capitalize on the IT revolution, spur economic growth, advance scientific research and develop the technologies of tomorrow, the New York State Designated Center of Excellence in Wireless and Information Technology (CEWIT) was created in 2003 as the anchoring building in SUNY Stony Brook University's Research and Development Park.

Since its inception, the Center has created a powerful intellectual portfolio resulting in numerous patents and has worked hard to build strategic alliances and business partnerships among the academic, scientific, and business communities. Our partners include some of the world's best known and most sophisticated giants of wireless and information technology. The Center is building on these achievements and has laid the foundation for R&D alliances with its industry partners, sponsors, and with other internationally known research institutions.

Director's Message

Innovation has fueled the economic growth throughout the history of mankind and serves as a valuable lens through which to examine a nation's history and national character. During World War II, U.S. Government sponsored research led to the atomic bomb, microwave radar, electronic computers, jet aircraft, and antibiotics. Government sponsored research also led to biotechnology, personal computers, and information economy.



Perhaps the biggest innovations in our time have come from information technology and the associated industry. Major thrust to the IT revolution was provided around 1975 with Intel's announcement of its microprocessor. Microsoft pioneered the age of personal computing moving the productivity resource to the desktop. In the 90's, the age of networked computing was pioneered by Cisco so that productivity could be shared and multiplied by the number of users on a network leading to the ultimate resource: the World Wide Web. Now as we lay the foundation for the 21st century, we enter the age of mobility, internet of things (IoT) and data analytics. The age of mobility is where all the productivity resources docked at our desks, and information locked in our network closets, will be unleashed in to the palm of every individual's hand. However, IT is still not a mature technology and we expect the rapid advances of the last several decades to continue and increase thousand folds in many fields.

IT will continue to create new and highly profitable businesses that we have not even imagined. Computational chemistry and biology, grid computing, tying far flung supply chains, and e-commerce are at the beginning of their creation. Data is now the raw material for the information economy, much as coal and iron ore were in the Industrial Revolution. Within the so-called "Internet of Things," sensors are being embedded in devices ranging from smartphones, automobiles, and utility meters to assembly lines, warehouses, and hospitals to capture data in real time. Hundreds of millions of users around the globe now contribute new data, generating new knowledge and collaboration on new innovations using the Internet. 15 out of 17 industry sectors in the U.S. have more data stored per company than the Library of Congress.

The only way to usher economic prosperity is to reignite the basic research that has always been the economic engine for the worldwide prosperity. The U.S. and international economic priorities require that we bring together businesses, academia and the government to create the next generation technologies and solutions to solve the economic problems that we face today.

The Center of Excellence in Wireless and Information Technology (CEWIT) at Stony Brook University is a leading U.S. research institution focusing on cutting-edge research in wireless and IT. Our focus is to conduct basic research and the commercialization of the resulting technologies. We seek collaborations and are keen to build strategic alliances with business enterprises, academic and scientific communities, and government entities.

— Dr. Satya Sharma, CEWIT Executive Director



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CEWIT Home of Innovation

UNSURPASSED RESOURCES FOR CREATIVE TECHNOLOGY DEVELOPMENT

Labs

The CEWIT facility, housing 40 new research laboratories, was designed to enable an extraordinary scope of activity. It fosters specialized research and development in all major areas of information technology and promotes interdisciplinary work among various specialties. Special capabilities include:

- Reality Deck, a fully immersive Gigapixel Display
- Immersive Cabin capable of creating a synthetic, fully immersive, 3D virtual environment
- · High speed computing laboratory and cybersecurity and information assurance laboratories
- Mobile Computing laboratory containing a National Science Foundation funded testbed for ad hoc and other emergency networks
- Motion Capture laboratory for face recognition and surveillance and a 3D scanning laboratory
- Microwave sensor laboratory for design and simulation of microwave and millimeter wave circuits
- Bioinformatics laboratory for computational genetics, protein docking, and biostatistics networking
- Future home laboratory, a model demonstration site for newly developed wireless and information technologies

Technology Incubator:

Providing an integrated suite of services involving both scientific vetting and business mentoring, our Incubator Program aids in the creation of new businesses and assists entrepreneurs with their business model, funding options, and how they can gain leverage by application of Stony Brook University (SBU's) intellectual and material assets. The integration of our Center's Business Development and Entrepreneur in Residence (EIR) functions has enabled us to further optimize a company's or inventor's experience on the SBU campus. Our venture funding network includes the Long Island Angel Network and Angel investment through Series B. Some of incubator companies include:

- Akai Kaeru: High-dimensional Data Visualization Technology
- Charmtech Labs: Screen-Reading Technology Application
- Code Dx: Software Vulnerability Management Systems
- FlightPartner: SaaS Provider of Intelligent Air Charter Scheduling
- Intelibs: Hybrid DAS Solutions and Intelligent In-Building Solutions
- Medpod: Next-generation Telemedicine Platforms
- Private Machines, Inc.: Hype-free Security for Infrastructure and Cloud
- Softheon: Data Analytics and Business Intelligence Software for Health Plans
- STS Global Inc.: Dynamic Satellite Communications and Telecommunications
- Web4Sign: Advanced Electronic and Graphometric Signature Technology
- Zebra Technologies Research Center: Mobility-Innovation focused R&D Lab
- ZyDoc: Business-to-Business Solutions for Healthcare



Innovating at CEWIT

Softheon's mission has always been to serve the member and make healthcare more secure and easier to enroll. With rising costs and lack of coverage options, Softheon has championed cloud-based technology that passes the infrastructure savings onto the member. Located at CEWIT on the Stony Brook University campus, Softheon has access to the best students and graduates that are learning the latest technology and policies, enabling their technology to have a competitive edge in the Software as a Solution (SaaS) space. Realizing these strengths, Softheon's team has been able to lean on their talented workforce to promote innovative solutions that are the best in the business.

At CEWIT, Softheon drives the rapid delivery of market-disrupting products and services by blending the expertise of Softheon team leaders with Stony Brook University's intellectual resources. A leading player in the healthcare space, Softheon has a proven track record in revenue growth and the creation of new high-paying jobs.

CEWIT Research Divisions

FOSTERING SPECIALIZED RESEARCH AND DEVELOPMENT





Communications and Devices

The Communications and Devices Division focuses on circuit design and testing, fabrication and prototyping, microwave sensor, and wireless/mobile computing device design and testing. The research activities in this division include, but are not limited to, digital signal processing, new sensor and RFID Systems, optical packet interconnects, wireless/mobile communications, image processing, micromachining, superconductor electronics, trusted hardware devices, and spectrum sharing.

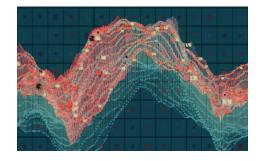
- Enabling Interoperable Public Safety Rad10 Communications
- A Flexible Network Infrastructure for Versatile Wireless Communications
- Mobile Data Gathering in Wireless Sensor Networks
- A System Infrastructure for Scalable and Robust Wireless Communications Services



Systems and Infrastructure

The Systems and Infrastructure Division focuses on developing applications based on the research conducted in the other divisions. The division is not only advancing research in related fields, but is also creating solutions and systems for commercialization. The activities in this division include, but are not limited to, mobile technologies for social impact, image processing, robotics, social networks, data visualization and visual analytics, applications of sensor networks and signal processing, smart transit systems, learning, secure storage, service oriented architectures, fault diagnosis, web information systems, reconfigurable hardware, and regulatory compliance.

- Advanced Documentation of Clinical Encounters and Context Award Presentation for Next Generation Electronic Medical Records
- Multiple Dimensional Data Visualization Made Accessible Using Illustrative Techniques
- Intelligent Mobile Technologies for Social Impact
- A Multi Semantic, Goal Oriented Programming Paradigm for Dependable Operation of Massively Distributed Reconfigurable Systems
- Wireless Utility Monitoring and Control for Efficient Energy Utilization





Network Technologies

The Network Technologies Division focuses on research, development, and commercialization of next generation wireless networks, multimedia mobile devices, and advanced solutions and services Research activities in this division include. but are not limited to, network design, modeling, implementation and testing of various forms of wireless ad hoc, sensor, and mesh networks; protocol design for wireless and mobile networks, vehicular networks; network planning and management: network security: location management and tracking; and physical layer aspects such as MIMO.

- Accessing Urban WiFi Networks from Moving Vehicles
- Cellular and Mobile Networks
 Security
- Data Driven Mobility Modeling for Wireless Networks
- Network Planning and Realtime Automated Management System
- Self Powered Wireless Sensor Technology for Monitoring the Health of Electric Power Transmission Systems





Software Systems

The Software Systems Division focuses on developing and commercializing cutting-edge wireless/ mobile computing and other software technologies including data management and analysis, data visualization, graphics and imaging, software and computer security, storage and file systems, distributed systems, user interface, Internet computing, software engineering, verification and optimization, parallel computing, statistical analysis and modeling, computational biology, and natural language processing. The research activities in this division include, but are not limited to, cyber-security, testing and verification, computer games, simulation and rendering, 3D visualization, cryptography, data modeling, algorithms, operating systems, geometric modeling, news and blog analysis, quality assurance, secure data management, virtual reality, file systems, augmented reality, bioinformatics, data mining and computational biology.

- The Cloud Computing Benchmarking Project
- Evidence Based Utilization Management of NYS Medicaid Program
- Instructional Technologies: The Future of Teaching and Learning
- Novel Interaction Techniques for Virtual Environments
- Volumetric Shape DNA



Medical Devices and Technologies

The Medical Division (CEWITMD) uses wireless and IT technologies to enhance the productivity and quality of healthcare, conducting the research and development leading to the engineering, prototyping, and commercialization of medical devices, products and technologies, which support patients and clinical care providers. Research areas are diverse and cover wireless medicine, the cardiovascular system, radiology, clinical pharmacology imaging modalities, virtual reality, telemedicine, wireless tracking, wireless ad hoc networks, optimized storage and communication of medical records and images, homecare medicine, computational genetics and protein docking, virtual colonoscopy, computational biology, implantable sensors and evidence-based medicine. CEWIT-MD further combines related programs that are being researched and investigated on the SUNY campuses and its Medical Centers. It identifies positive opportunities, as well as barriers, to wider adoption of wireless medical and healthcare technologies, developing recommendations for emerging healthcare needs.

- Biomedical Contact Interface Diagnosis Based on Nonlinear Viscoelastic Model
- Combined Near and Far Field UHF RFID Based Specimen Inventory and Tracking System
- Computer Aided Diagnosis System for Fast, Accurate, and Remote Evaluation of Acute Chest Pain
- Integrated Modeling and Learning of Multimodality Data Across Subjects for Brain Disorder Survey
- Self Powered Wireless Health Monitoring System



CEWIT Unparalleled Resources

THE LEADING EDGE OF TECHNICAL INNOVATION

New Enterprise Development

START-UPS CREATED BY IN-HOUSE TECHNOLOGIES

- Natural language, self-teaching Webcrawler
- 3D biomedical visualization
- RFID identification
- Web navigation
- Future commercialization: Cardiac monitoring system with wireless data delivery



IT Edge

100
PERCENT WIFI
VOIP UNIFIED
COMMUNICATION

- State-of-the-art Data Center
- Private Enterprise Computing Storage Cloud
- Direct 500Mbps Internet Connection with Redundancy
- 1.5 Billion Pixel Reality Deck



Accomplishments

150
MILLION DOLLARS
IN INDUSTRY
COMMITMENTS

In the Last 3 Years

- 36 US Patents
- 1,000+ jobs created or saved
- 680+ research publications
- 500+ projects completed
- 123 invention disclosures, and 12 licenses



Research

DIVERSE RESEARCH AREAS

- Software Systems
- Network Technologies
- Communications and Devices
- Medical Devices and Technologies
- Systems and Infrastructure
- Smart Energy



Global Partners

CORE INDUSTRY PARTNERS

- CA Technologies
- Zebra Technologies
- Northrop Grumman
- Henry Schein, Inc.
- Northwell Health
- IBM
- Intelligent Product Solutions
- SVAM International
- Teva Pharmaceuticals
- JDA Software
- Asurion
- RingLead, Inc.
- Verizon
- STS Global

Academic and Research Centers

- Brookhaven National Laboratory
- Cold Spring Harbor Laboratory
- The New York Academy of Sciences
- The Feinstein Institute for Medical Research
- The State University of New York
- SUNY and CEWIT Korea
- Center for Visual and Decision Informatics
- Center for Systems Biology
- Center for Visual Computing
- National Cybersecurity Institute

Collaboration

Industry and research leaders provide guidance in setting industry-relevant priorities for CEWIT's applied research programs while in turn receiving unparalleled intellectual power and cutting-edge R&D resources to aid in developing real-world solutions and mission-critical applications.

Facilities



- 100,000sf Building
- 70 Faculty Affiliates
- 280 Graduate Students
- 11,000sf Incubator Space



ECONOMIC DEVELOPMENT

TAKING CARE OF BUSINESS

At Stony Brook University, we're all about taking care of your business. We assist firms of all sizes and in various stages of growth, with a focus on innovation and entrepreneurship. We have the resources to help ensure the success of your business, including one of the nation's most comprehensive suites of economic development programs, and offer you access to the knowledge, worldclass facilities and human capital that only a leading university can provide. Helping 500 industry partners to obtain close to a billion dollars in financing and revenues and create/retain a projected total of more than 19,000 jobs through over 4,000 projects, Stony Brook is a crucial asset to the Long Island economy and the businesses it supports. Find out what hundreds of companies have discovered:





Innovation Hot Spot

The Long Island Innovation Hot Spot is an Empire State Development Division of Science, Technology and Innovation STI-supported program for regional incubators, accelerators, co-working spaces, and other efforts supporting startups across New York State. The Program provides five years' worth of state corporate and sales tax exemptions for participating companies and these benefits are portable - companies may take them along wherever they may locate in the state. The Long Island program also offers additional services focused on protecting intellectual property, writing proposals for federal Small Business Innovation Research awards, and conducting market research and planning.

Ann-Marie Scheidt, annmarie.scheidt@stonybrook.edu (631) 216-7605

HOT SPOTS

- LaunchPad
- LI Tech COMETS
- Entrepreneurial Technology Innovation Center (NYIT)
- Broad Hollow Bioscience Park
- SBU Incubation Programs Hofstra Center for Entrepreneurship



StartUp NY

Stony Brook's StartUp NY program seeks to provide increased employment opportunities to make Long Island a global center for innovation and the model for a knowledge-based suburban economy founded on a diversified range of innovation driven industry clusters in life sciences, information technology, clean energy, defense and homeland security.

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CEWIT and the Economic Development Partnership

The Office of the Vice President for Economic Development at Stony Brook University has an unparalleled economic role in fostering a dynamic, interconnected, entrepreneurial regional ecosystem that fuels self-sustaining, technology-based industry clusters driven by continuing innovation, while collaborating with industry and government to design new innovationfocused economic development institutions and mechanisms — including CEWIT.

Economic Development

AT STONY BROOK UNIVERSITY

Center for Corporate Education

Patricia Malone **Executive Director** (631) 216-7518

patricia.malone@stonybrook.edu

Small Business Development Center (SBDC)

Bernie Ryba **Acting Director** (631) 216-9837

bernard.rvba@stonvbrook.edu

Strategic Partnership for **Industrial Resurgence (SPIR)**

Dr. Clive Clayton, Director (631) 216-7112

clive.clayton@stonybrook.edu

TRAINING AND

EDUCATION

ECONOMIC DEVELOPMENT Yacov Shamash. Vice President

(631) 216-7600

OFFICE OF

yacov.shamash@stonybrook.edu **CENTERS** FOR ADVANCED

SBDC

TECHNOLOGY

BUSINESSINCUBATORS

Advanced Energy Center (AEC)

Jim Smith Assistant Vice President of **Economic Development** (631) 216-7400

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Center of Excellence in Wireless and Information Technology (CEWIT)

Dr. Satya Sharma, **Executive Director**

(631) 216-7000

satya.sharma@stonybrook.edu

Center for Biotechnology (BioCAT)

Dr. Clinton Rubin **Operations Director**

(631) 632-8521 clinton_rubin@stonybrook.edu

Center for Advanced Technology

in Diagnostic Tools and Sensor Systems (SensorCAT)

> Dr. Serge Luryi, Director (631) 632-1368

serge.luryi@stonybrook.edu

Center for Advanced **Technology in Integrated Electric Energy Systems (CIEES)**

Dr. Benjamin Hsiao **Executive Director** (631) 632-7793

benjamin.hsiao@stonybrook.edu

Clean Energy Business Incubator Program (CEBIP)

David Hamilton **Executive Director** (631) 444-8800

david.hamilton@stonybrook.edu

Business Incubator at Calverton

SPIR

CENTERS

EXCELLENCE

Christine Kempner, Associate Director

(631) 444-8800

christine.kempner@stonybrook.edu

Long Island High Technology Incubator (LĬĤTI)

Dan Polner, Incubator Advocate (631) 444-8888 daniel.polner@stonybrook.edu

Manufacturing and Technology Research Consortium (MTRC)

Dr. Imin Kao. Executive Director (631) 444-8800

CEWIT Collaborative Partnerships

UTILIZING OUR BRAINPOWER



Entrepreneur-in-Residence

CEWIT is the leader in innovative research and development for wireless and IT communications, infrastructure, networking, and software. We have all the resources you need to stay on the leading edge of technical innovation – right in your backyard. If you need R&D and wish to capitalize on your intellectual property by engaging the most innovative minds in the world, contact our Business Development Manager and Entrepreneur in Residence to discuss leveraging our worldclass brain power and state-of-the-art facilities:

Lawrence Weber, Ph.D. lawrence.weber@stonybrook.edu (631) 632-1368

Growing with CEWIT



STS Global, Inc.

STS Global Inc. is a CEWIT-based satellite + communications startup created in March 2015. STS Global's 8-person team has since secured over two dozen contracts valued at \$7.2 million. These projects include the deployment of fixed and mobile earth stations around the world. These stations are designed to allow satellite connectivity with video and data distribution to remote areas. Their current customer base has grown to include prominent telecommunication and satellite service providers, U.S. governmental entities, and NGOs. STS Global has already earned recognition and respect from its customers and the satellite industry, forming important partnerships that continue to expand business opportunities.

At CEWIT, STS Global's focus in on crafting solutions and connecting people. By combining their sophisticated satcom technologies with CEWIT's R&D expertise, STS Global creates next-generation cybersecurity, satellite, and terrestrial systems that can provide reliable services anywhere on earth.





TECH DRIVEN OPPORTUNITIES

www.cewit.org/programs





Through a suite of CEWIT-designed symposiums, programs, and conferences, CEWIT involves the academic and business communities in gaining skill sets in technology and business development, as well as reports on the latest industry and academic advancements in a number of tech-driven fields including health technologies and medical devices, big data, the internet of things, cybersecurity, smart energy, smart urban systems, technological applications, and technology entrepreneurship. Our programs encourage audiences to engage in CEWIT activities and in turn, help to educate them on trends in both wireless and information technologies and best business practices — a beneficial partnership between our Center and our region.

8 core interdisciplinary center programs

100+ international expert speakers annually

50-500+ attendees averaging 50/50 industry/academia

\$100K in industry and partner commitments

Sponsorship and exhibitor opportunities
Kathleen Ferrell • kathleen.ferrell@stonybrook.edu • 631-216-7114

CEWIT Conference

Emerging Tech for a Smarter World

The annual CEWIT Conference is the premier international forum on the applications of emerging technologies in infrastructure, healthcare, and energy — three of the most critical components of a smarter global environment.

Symposium Series

Tech Trends

Reporting on the latest technology trends, CEWIT's symposium series brings both academic research and industry innovations together for critical, issue-relevant discussions with the experts.

Economic Development

Entrepreneur's Toolkit & Incubator Showcase

In addition to our Entrepreneur-in-Residence and Incubator programs, CEWIT hosts a suite of entrepreneurship-focused workshops, roundtables, and events to accelerate business development and showcase the technologies our member entrepreneurs are introducing to the marketplace including the annual Incubator Company Showcase — an exclusive opportunity to meet Stony Brook University's 50+ biotech, energy and IT entrepreneurs.

Hack@CEWIT

IoT Innovations

CEWIT's annual interdisciplinary student hackathon brings over 200 regional hackers, \$40K in industry sponsorship commitments, and over 25 hands-on tech talks and workshops together for a two-day technical challenge awarding over \$5K in prizes to the most innovative, most ambitious, most original, most health-conscious, and most industry-applicable IoT projects — at Stony Brook University.

The two-day challenge held over President's Day Weekend, in conjunction with National Engineer's Week, is designed with our core partners and sponsors to select industry-relevant scenarios that will have a direct, real-world application to their product portfolios and will encourage lasting relationships with companies in the STEM fields.

CEWIT People and Partners

BUILDING BUSINESS RELATIONSHIPS AND SHAPING THE FUTURE

Leadership

Dr. Yacov Shamash Vice President for Economic Development yacov.shamash@stonybrook.edu

Dr. Satya Sharma Executive Director satya.sharma@stonybrook.edu

Dr. Arie Kaufman Chief Scientist ari@cs.stonybrook.edu

Dr. Shmuel Einav Director, Medical Technologies Division shmuel.einav@stonybrook.edu

Dr. Rong Zhao Director, Software Systems Division Rong.zhao@stonybrook.edu

Dr. Fan Ye, Director, Communications and Devices Division fan.ye@stonybrook.edu

Dr. Sangjin Hong Director, Globalization sangjin.hong@cewit.stonybrook.edu

Dr. Lawrence Weber Business Development Manager and Entrepreneur in Residence lawrence.weber@stonybrook.edu

Mr. Bin Zhang Associate Director, Computing Services bin.zhang@stonybrook.edu

The Center of Excellence in Wireless and Information Technology (CEWIT) at Stony Brook University

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Advisory Board

Russell Artzt Executive Chairman RingLead, Inc.

Girish Rishi Chief Executive Officer JDA Software

Otto Berkes Chief Technology Office CA Technologies

Richard Boivie
Manager, Advanced Internet and Security Technologies
IBM TJ Watson Research Center

Steven J. Cento DTL/Engineering Fellow, Northrop Grumman Corporation

Jim Harding Senior Vice President & Chief Technology Officer Henry Schein Inc.

Masaaki Maeda Strategic Advisor Asurion, LLC

Bob Sanders

Senior Vice President Data Capture Solutions and Engineering Shared Services Zebra Technologies

Dr. Kevin Tracey President Feinstein Institute for Medical Research

Dr. Ellis Rubinstein President & Chief Executive Officer NY Academy of Sciences

Kamal Bherwani Executive Chairman Magine TV

Adam Famularo, Chief Executive Officer ERwin, Inc.

Fernando Salles Vice President, Head of Global Research Teva Pharmaceuticals

Michael Bernstein, Provost and Senior Vice President for Academic Affairs Stony Brook University

Partners

Applied Visions Asurion, LLC

Brookhaven National Laboratory

Buncee

CA Technologies

Carter, DeLuca, Farrell & Schmidt, LLP

CEWIT Korea

Charmtech Labs LLC

CISCO Code Dx

Digital Fly

Empire State Development Corporation

ERwin, Inc.

F. Chau & Associates, LLC

Farrell Fritz

Feinstein Institute for Medical Research

FlightPartner Technologies, Inc.

Henry Schein Inc.

Hoffmann & Baron, LLP

IBM TJ Watson Research Center

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Israeli Innovation Authority

Medpod

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Northwell Health NTT DOCOMO

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Verizon Enterprise Solutions

Web4Sign

Zebra Technologies

1010data